

DRAFT

**ENVIRONMENTAL ASSESSMENT
FOR PROPOSED ADDITIONS
AND ALTERATIONS (ADAL)
OF THE
FITNESS CENTER COMPLEX AT
BUCKLEY AIR FORCE BASE, COLORADO**

DEPARTMENT OF THE AIR FORCE



**460 CES/CEV
660 SOUTH ASPEN STREET, STOP 86
BUCKLEY AFB, COLORADO 80011-9511**

**AIR FORCE CENTER FOR
ENGINEERING AND THE ENVIRONMENT**

OCTOBER 2009

ACRONYMS

°F	degrees Fahrenheit	JFHQ-CO	Joint Force Headquarters – Colorado
AASF	Army Aviation Support Facility	LEED	Leadership in Energy and Environmental Design
ACM	asbestos-containing material	MMRP	Military Munitions Response Program
ADAL	Additions and Alterations	mph	miles per hour
AFB	Air Force Base	NAAQS	National Ambient Air Quality Standards
AFI	Air Force Instruction	NEPA	National Environmental Policy Act
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health	NO ₂	nitrogen dioxide
AQCR	Air Quality Control Region	NO _x	nitrogen oxides
AT/FP	Antiterrorism/Force Protection	O ₃	ozone
BMP	best management practice	OSHA	Occupational Safety and Health Administration
CAA	Clean Air Act	Pb	lead
CAAA	Clean Air Act Amendments	PM	Particulate matter
CDPHE	Colorado Department of Public Health and Environment	PM ₁₀	particulate matter equal to or less than ten microns in diameter
CEQ	Council on Environmental Quality	PM _{2.5}	particulate matter equal to or less than 2.5 microns in diameter
CFR	Code of Federal Regulations	PT	physical training
CO	carbon monoxide	QD	quantity-distance
COANG	Colorado Air National Guard	ROI	region of influence
DoD	Department of Defense	sf	square feet
EA	Environmental Assessment	SIP	State Implementation Plan
EIAP	Environmental Impact Analysis Process	SO ₂	sulfur dioxide
EIS	Environmental Impact Statement	UFC	Unified Facilities Criteria
ERP	Environmental Restoration Program	USAF	U.S. Air Force
FONSI	Finding of No Significant Impact	USDA/SCS	U.S. Department of Agriculture/Soil Conservation Service
HAWC	Health and Wellness Center	USEPA	U.S. Environmental Protection Agency
HVAC	heating, ventilation, and air conditioning	VOC	volatile organic compounds
I-	Interstate	WRCC	Western Regional Climate Center
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning		
IRP	Installation Restoration Program		

EXECUTIVE SUMMARY

The U.S. Air Force (USAF) prepared and published an *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado* in November 2001; an accompanying Finding of No Significant Impact (FONSI) was signed on 15 November 2001. A component project evaluated within the Environmental Assessment (EA) was construction of a Physical Fitness Center. At that time, existing fitness facilities at Buckley Air Force Base (AFB) were dispersed among three separate buildings and were considered inadequate to meet then-current and projected training and fitness requirements. The new Fitness Center Complex was designed at approximately 54,500 square feet (sf); its construction was completed in 2004 and it is in use today. The USAF proposes to construct additions to and alterations within the existing Fitness Center Complex at Buckley AFB in order to correct the facility's programmatic deficiencies and to achieve compliance with the USAF Fitness Facilities Design Guide criteria. Proposed additions include two (2) two-story additions each with a 5,000-sf footprint (20,000 sf total) and a 12,497-sf Aquatics Center with Lap Pool.

The purpose of the proposed Fitness Center additions and alterations is to correct the existing Fitness Center's programmatic deficiencies and achieve compliance with the USAF Fitness Facilities Design Guide criteria through appropriate facility expansion. An Aquatics Center/Lap Pool is identified as an enhanced element in the USAF Fitness Facilities Design Guide criteria and is, therefore, a functional component of the "Fit to Fight" Program. Functional amenities, such as the Aquatics Center/Lap Pool, are required to facilitate adequate and extended usage of the existing Fitness Center.

As a supplement to the *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado* (2001), this EA considers additions to the Proposed Action and evaluates potential environmental impacts of project enhancement to those resources that would likely be affected by implementation of the Proposed Action or its alternatives. Further, where existing environmental conditions have changed (e.g., change in status of special species), this EA updates those analyses. In this case, this EA evaluates the following environmental resources: Air Quality, Geological Resources, Hazardous Materials and Wastes, and Safety and Occupational Health.

ENVIRONMENTAL ASSESSMENT FOR PROPOSED ADDITIONS AND ALTERATIONS OF THE FITNESS CENTER COMPLEX AT BUCKLEY AFB

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SECTION 1

PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

This supplement is prepared in accordance with regulations issued by the Council on Environmental Quality (CEQ), 32 Code of Federal Regulations (CFR) Part 989, *Environmental Impact Analysis*. In accordance with CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA) (40 CFR Parts 1500-1508, Section 1502.13), this section specifies the purpose and need for the proposed Additions and Alterations (ADAL) to the Fitness Center Complex at Buckley Air Force Base (AFB), Colorado.

1.2 BACKGROUND

The U.S. Air Force (USAF) prepared and published an *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado* in November 2001; an accompanying Finding of No Significant Impact (FONSI) was signed on 15 November 2001. A component project evaluated within the Environmental Assessment (EA) was construction of a Physical Fitness Center. At that time, existing fitness facilities at Buckley AFB were dispersed among three separate buildings and were considered inadequate to meet then-current and projected training and fitness requirements. The new fitness center was designed at approximately 54,500 square feet (sf); its construction was completed in 2004 and it is in use today.

Since publication of the EA and signing of the associated FONSI in November 2001, the USAF has updated its Fitness Facilities Design Guide (*Air Force Services Facilities Design Guide: Fitness Centers* [USAF 2005]) to reflect its “Fit for Fight” program requirements. Per the Fitness Facilities Design Guide, the USAF Fitness Facility requirement is to “facilitate the readiness, fitness, and morale of Air Force members by providing effective, efficient, and pleasant spaces for individual and group exercise, unit physical training (PT), team and individual sports, testing, training/education, and necessary support.” Based on Fitness Facility Design Guide requirements, the following functions at Buckley AFB’s

existing Fitness Center and component Health and Wellness Center (HAWC) have been assessed:

- Fitness Equipment Spaces
- Unit PT and Group Exercise
- Fitness Testing
- Fitness Training
- Team and Individual Sports (intramural, extramural, varsity)
- Administrative Functions
- Support Function
- Health and Wellness.

Based on the evaluation of these functions, it has been determined that the Fitness Center is deficient primarily in Group Exercise as well as Locker Rooms and Equipment Storage space. Each of these functions is a core area required for adequate operation of the facility within the guidelines of the “Fit to Fight” Program.

1.3 PURPOSE AND NEED FOR PROPOSED ACTION

Purpose. The *purpose* of the proposed Fitness Center Complex ADAL is to correct the existing Fitness Center’s programmatic deficiencies and achieve compliance with the USAF Fitness Facilities Design Guide criteria through appropriate facility expansion. An Aquatics Center/Lap Pool is identified as an enhanced element in the USAF Fitness Facilities Design Guide criteria and is, therefore, a functional component of the “Fit to Fight” Program. Functional amenities, such as the Aquatics Center/Lap Pool, are required to facilitate adequate and extended usage of the existing Fitness Center.

Need. The *need* for the proposed Fitness Center Complex ADAL is that physical conditioning and recreation programs, specifically Unit Training/Group Exercise, requisite to the “Fit to Fight” Program, would continue to be limited due to space restrictions if the action is not implemented. Inadequate spatial and programmatic demands adversely affect the morale, well being, and retention rate of assigned military personnel. Deficiencies in these core areas would continue to complicate the facilitation of readiness and fitness of military members. Physical conditioning and recreational programs related to the indoor

1 Aquatics Center/Lap Pool would continue to be curtailed by the current
2 situation at the Fitness Center. Although the existing conditions do not
3 adversely or directly affect mission capability, the new indoor Aquatics
4 Center/Lap Pool would enhance the “Fit to Fight” Program and facilitate
5 increased productivity. (Upon completion, the facilities could be used by other,
6 non-Air Force components on an “as available” basis. Buckley AFB has tenants
7 from the Army, Navy, Marines, and Air National Guard who have annual
8 aquatic training requirements; however, the scope of the proposed project is
9 based on Air Force requirements.)

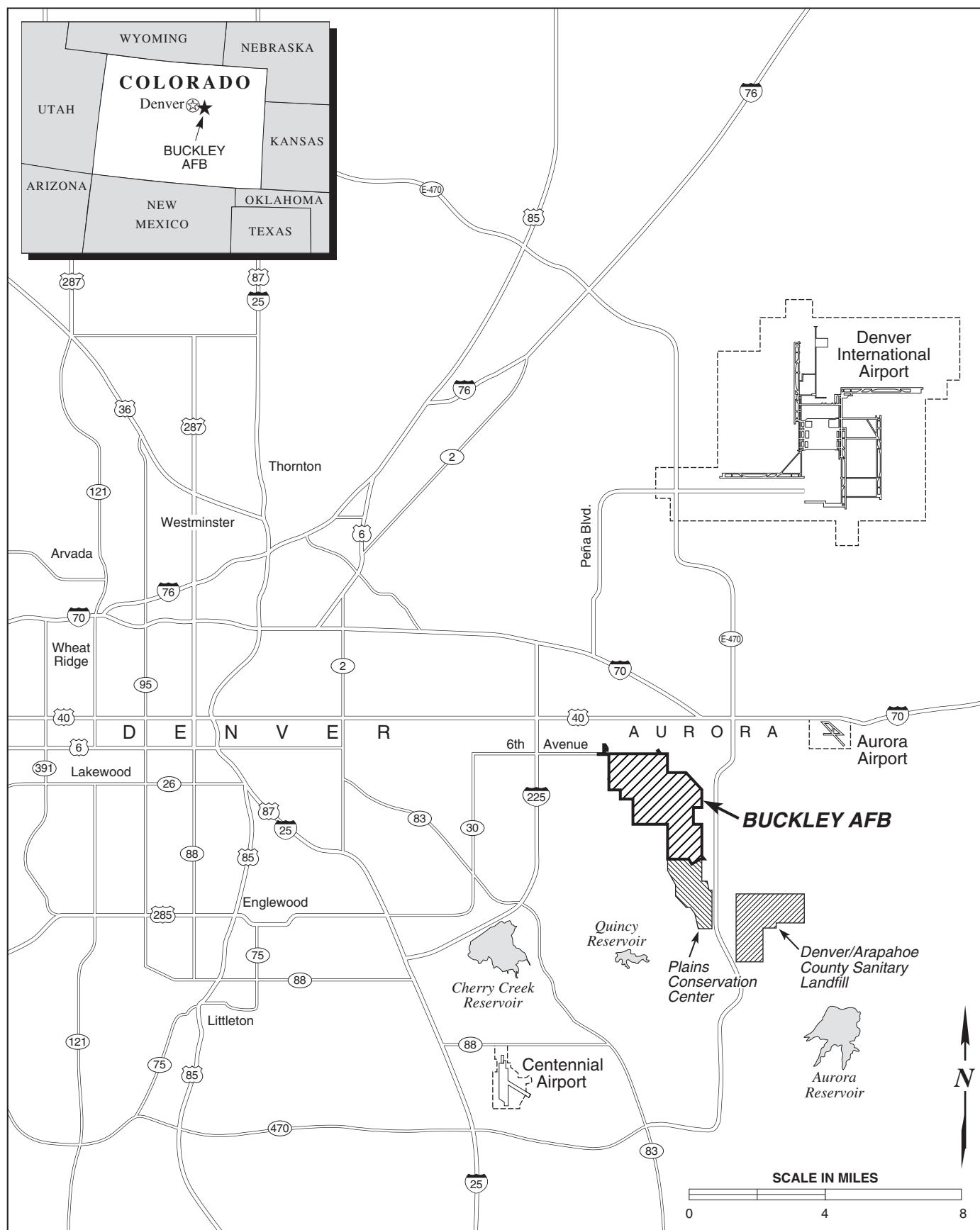
10 **1.4 LOCATION AND DESCRIPTION OF BUCKLEY AFB**

11 Buckley AFB, abutting the eastern limits of the City of Aurora, is located in
12 Arapahoe County, Colorado, approximately 5 miles east of Denver and
13 approximately 10 miles southwest of Denver International Airport (Figure 1-1).
14 The Fitness Center Complex is located in the northwest quadrant of the base and
15 is set among other facilities providing community and related services to
16 personnel at the base (Figure 1-2).

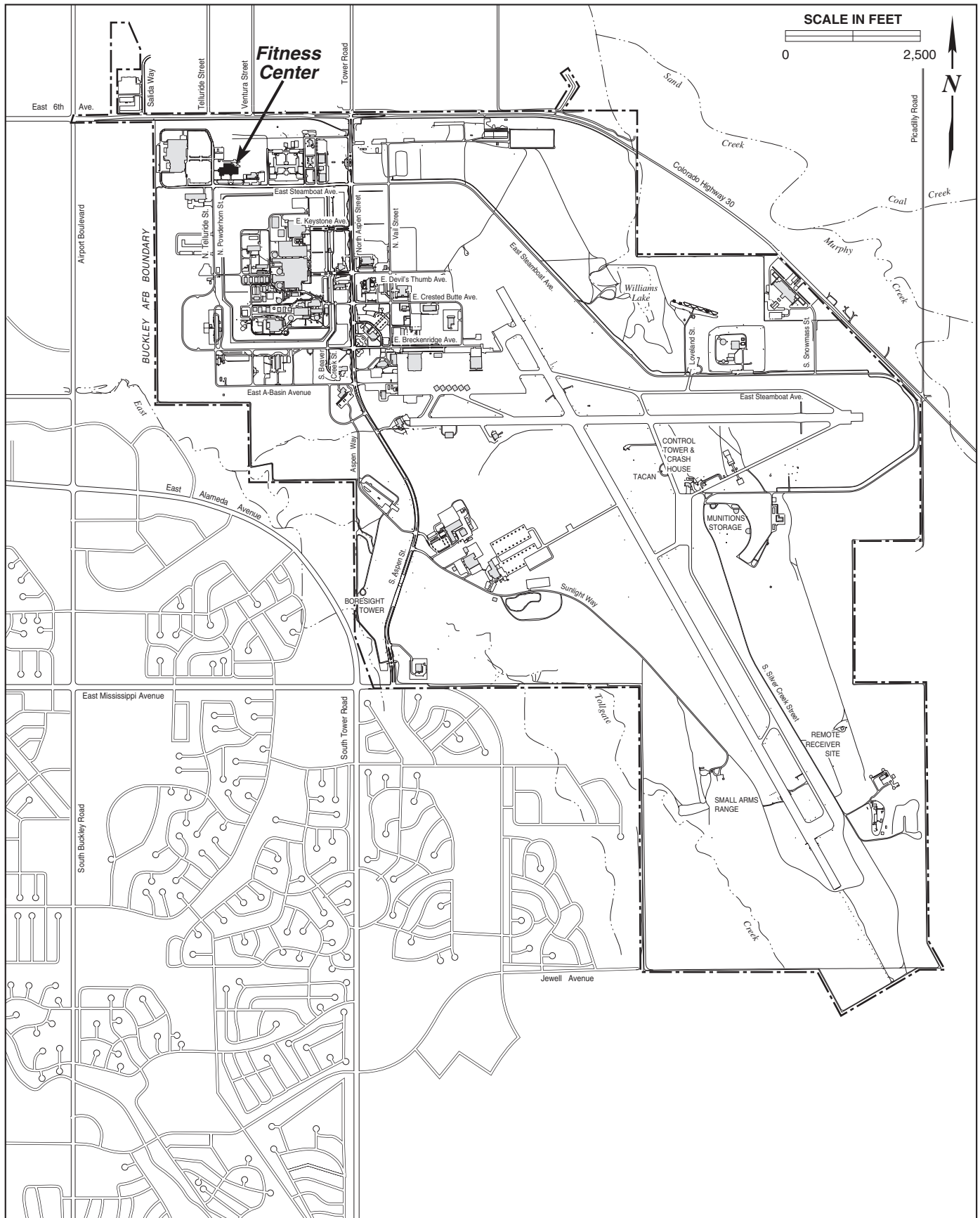
17 Buckley AFB currently directly and indirectly supports approximately 92,039
18 people (including active duty, retirees, dependents, etc.) throughout the Front
19 Range community. This includes 3,934 active duty members from every service,
20 3,380 National Guard personnel and Reservists, 4,254 civilians, 2,671 contractors,
21 approximately 37,800 retirees and dependents, and approximately 40,000
22 veterans. Buckley AFB is home to the 460th Space Wing and more than 37 other
23 units representing every branch of service and components: Active Duty,
24 National Guard, and Reserve.

25 **1.4.1 The 460th Space Wing**

26 The 460th Space Wing is the current host for Buckley AFB. The mission of the
27 460th Space Wing is to deliver global infrared surveillance, tracking, and missile
28 warning for theater and homeland defense and provide combatant commanders
29 with expeditionary warrior Airmen.



No warranty is made by the State/Territory as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a “living document,” in that it is intended to change as new data become available and are incorporated into the GIS database.



EA

Buckley AFB

FIGURE
1-2

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1 The 460th Operations Group provides missile warning, missile defense, technical
2 intelligence, satellite command and control, battle-space characterization, and
3 robust communications. The group's team of space professionals operates the
4 Defense Support Program satellite, which provides continuous global
5 surveillance, tracking and targeting.

6 The 460th Mission Support Group provides trained personnel to support the Air
7 and Space Expeditionary Forces and Homeland Defense. The group is
8 responsible for force protection, quality of life, human resources, contracting,
9 logistics, base infrastructure, and environmental stewardship support to the
10 460th Space Wing, its customers and the base operational missions.

11 The 460th Medical Group supports military readiness to the Air Expeditionary
12 Forces and Homeland Defense missions by ensuring base personnel are
13 medically qualified for deployments and providing health care, life skills
14 support, family advocacy, aerospace medicine, public health, bioenvironmental
15 engineering, optometry, ancillary services, health and wellness services, and
16 dental care.

17 In addition to the 460th Space Wing, several major tenant organizations are
18 located at Buckley AFB and would benefit from having access to an expanded
19 Fitness Center Complex for physical fitness and other training activities. These
20 major tenant organizations include:

- 21 • Colorado Air National Guard (COANG)
- 22 • Aerospace Data Facility – Colorado
- 23 • 566th Intelligence Squadron
- 24 • Joint Force Headquarters – Colorado (JFHQ-CO)
- 25 • 140th Wing (COANG)
- 26 • 743rd Military Intelligence Battalion
- 27 • Army Aviation Support Facility (AASF)
- 28 • Marine Air Control Squadron 23, Marine Air Control Group 48, 4th
- 29 Marine Aircraft Wing
- 30 • Quebec Battery, 5th Battalion, 14th Marines, 4th Marine Division
- 31 • Company A, Marine Cryptologic Support Battalion
- 32 • Bravo Company, Intelligence Support Battalion, Marine Forces Reserve
- 33 • Headquarters, 169th Field Artillery Brigade

- 1 • US Coast Guard Cryptologic Unit – Colorado
- 2 • Navy Operational Support Center (NOSC)
- 3 • Naval Information Operations Command (NIOC)

4 **1.5 SUMMARY OF ENVIRONMENTAL STUDY REQUIREMENTS**

5 The *Environmental Impact Analysis Process* (EIAP) is the process by which Federal
6 agencies facilitate consideration of environmental regulations and through which
7 the public and agencies have an opportunity to make known their concerns
8 about federally proposed or funded activities. The primary legislation affecting
9 these agencies' decision-making process is the NEPA of 1969. This act and other
10 facets of the EIAP are described below.

11 In accordance with NEPA, Federal agencies are required to integrate
12 environmental values into their decision-making process by considering the
13 environmental impacts of their proposed actions and reasonable alternatives to
14 those actions. The intent of NEPA is to protect, restore, or enhance the
15 environment through well-informed Federal decisions. The CEQ was
16 established under NEPA to implement and oversee Federal policy in this
17 process. The CEQ subsequently issued *Regulations for Implementing the Procedural*
18 *Provisions of the National Environmental Policy Act* (40 CFR § 1500-1508, 32 CFR
19 part 989). These regulations specify that an EA be prepared to:

- 20 • briefly provide sufficient analysis and evidence for determining whether
21 to prepare and Environmental Impact Statement (EIS) or a finding of no
22 significant impact (FONSI);
- 23 • aid in an agency's compliance with NEPA when no EIS is necessary; and
- 24 • facilitate preparation of an EIS when one is necessary.

25 To comply with NEPA and other pertinent environmental requirements, such as
26 the Endangered Species Act and Clean Air Act, and to assess impacts on the
27 environment, the decision-making process includes a study of environmental
28 issues related to the ADAL at the Fitness Center Complex at Buckley AFB.

1.6 INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING (IICEP)

Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) is a federally mandated process for informing and coordinating with other governmental agencies regarding proposed actions. As detailed in 40 CFR § 1501.4(b), CEQ regulations require intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the IICEP process, the Air Force will notify relevant Federal, state, and local agencies and allow them sufficient time to make known their environmental concerns specific to a proposed action. Comments and concerns submitted by these agencies during the IICEP process are subsequently incorporated into the analysis of potential environmental impacts conducted as part of the EA.

1.7 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

This EA supplements the *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado* (2001) since:

- proposed ADAL to the Fitness Center Complex (as described in Section 2, *Description of Proposed Action and Alternatives*) were not evaluated in the original EA
- the extent of ground disturbance (namely construction-related excavation) would be greater under these proposed actions than those evaluated in the original EA
- environmental resources unaffected by the original proposed Fitness Center construction have the potential to be affected by implementation of the ADAL proposed.

As a supplement to the *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado* (2001), this EA considers additions to the Proposed Action and evaluates potential environmental impacts of those project enhancement to those resources that would likely be affected by implementation of the Proposed Action or its alternatives. Further, where existing environmental conditions have changed (e.g., change in status of special species), this EA updates those analyses. In this case, this EA evaluates the following environmental resources:

- 1 • Air Quality
- 2 • Geological Resources
- 3 • Hazardous Materials and Wastes
- 4 • Safety and Occupational Health

5 As such—and per NEPA—those environmental resources that are anticipated to
6 experience either no or negligible environmental impact under implementation
7 of the Proposed Action or its alternatives, or those whose environmental
8 conditions remain unchanged from the analysis presented in the *Environmental*
9 *Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base,*
10 *Colorado* (2001) are not examined in detail in this supplement. These
11 environmental resources include:

- 12 • Biological Resources
- 13 • Land Use
- 14 • Water Resources (including Wetlands and Floodplains)
- 15 • Cultural Resources
- 16 • Noise
- 17 • Utilities
- 18 • Transportation and Circulation
- 19 • Airspace Management
- 20 • Socioeconomics
- 21 • Environmental Justice
- 22 • Visual Resources

23 With respect to water resources which were analyzed in detail in the
24 *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley*
25 *Air Force Base, Colorado* (2001), further analysis has been excluded from this
26 document because the Proposed Action is expected to result in negligible
27 impacts and comply with U.S. Environmental Protection Agency stormwater
28 requirements which have been updated since 2001. The General Permit for
29 Stormwater Discharges from Construction Activities (Construction General
30 Permit) Program is applicable to projects that disturb more than 1 acre and is
31 intended to prevent pollutants on construction sites from being transported off
32 site by stormwater runoff. In accordance with the Construction General Permit
33 Program, a Notice of Intent would be obtained for the Proposed Action and a
34 site-specific Storm Water Pollution Prevention Plan, including sediment and

- 1 erosion control measures, would be developed and implemented for
- 2 construction activities.

SECTION 2
PROPOSED ACTION AND ALTERNATIVES

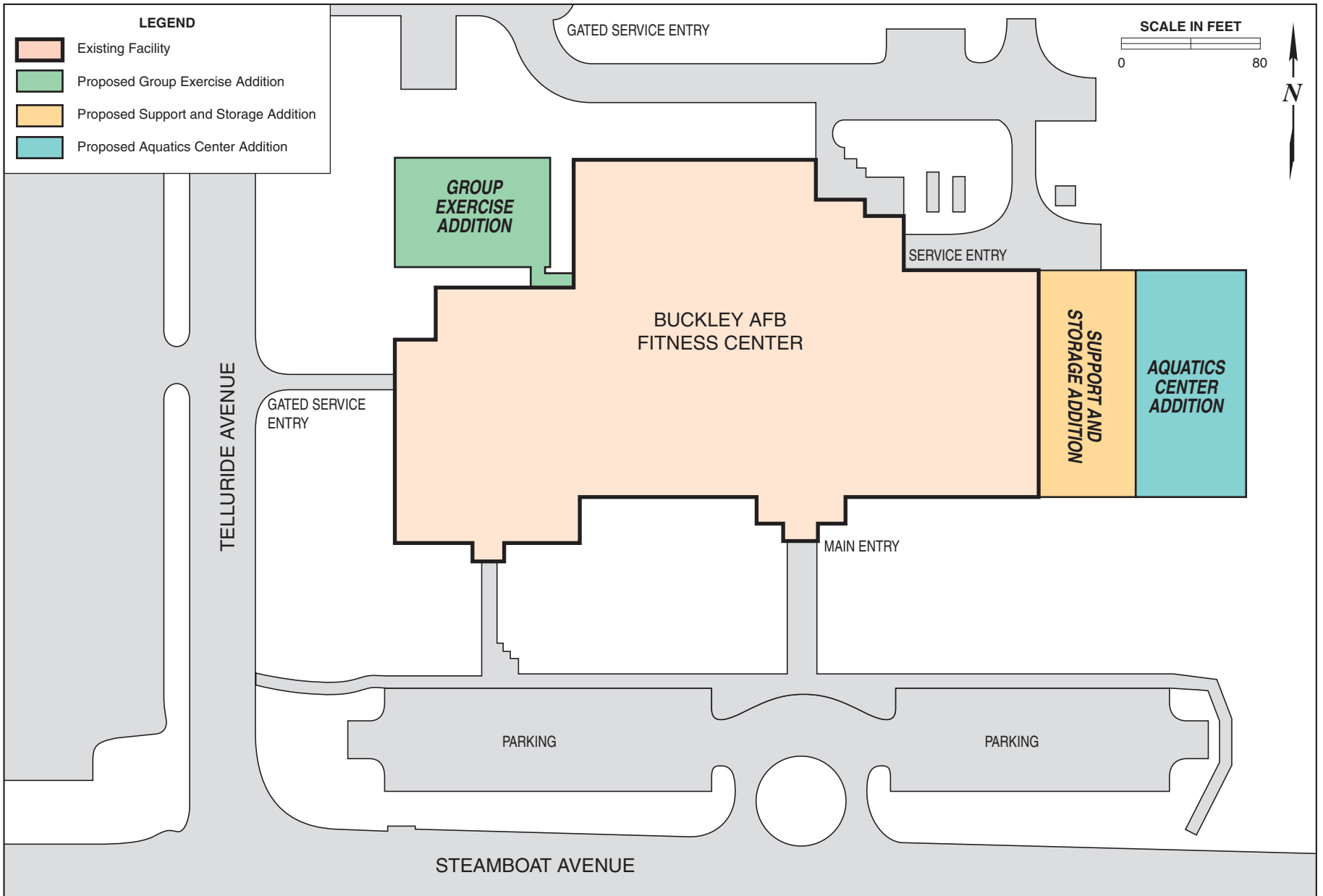
2.1 INTRODUCTION

The USAF proposes to construct additions to and alterations within the existing Fitness Center Complex at Buckley AFB in order to correct the facility's programmatic deficiencies and to achieve compliance with the USAF Fitness Facilities Design Guide (2005) criteria. This section describes details related to the Proposed Action and the No-Action Alternative.

2.2 PROPOSED ACTION

In accordance with the USAF Fitness Facilities Design Guide, the USAF proposes to construct and maintain the following enhancements to the Fitness Center Complex (Figure 2-1):

- a two-story addition with a 5,000-square foot (sf) footprint (10,000 sf total) to the northwest corner of the Fitness Center to include Group Exercise spaces, public toilets, stairs, elevator, and storage spaces.
- a two-story addition with a 5,000-sf footprint (10,000 sf total) to the eastern side of the Fitness Center for lockers, storage, and support space; the second story would extend above the existing men's locker area only.
- an Aquatics Center with Lap Pool and associated infrastructure (with an open ceiling height of two-stories) totaling 12,497 sf. The Lap Pool would be enclosed, securable, directly accessible from the locker rooms utilizing the shower areas as wet transitions, and include ample storage for equipment. The Aquatics Center/Lap Pool would be constructed using slip-resistant decking, moisture-resistant finishes, movable starting block mounts, lifeguard stations, and handicap access lift. The Lap Pool would have appropriate utility support for time clock, public address system, scorer's table, and humidity control. The pool would meet competition requirements with eight lanes and would be adequately sized to accommodate water aerobics. The Lap Pool would be cleaned and maintained to meet applicable public health standards and use and storage of chemicals associated with cleaning and maintenance would comply with all appropriate regulations.



EA

Proposed Additions to the Buckley AFB Fitness Center

FIGURE
2-1

No warranty is made by the State/Territory as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the GIS database.

2.2.1 Design and Construction

Design and construction of the Fitness Center Complex ADAL would incorporate sustainable principles (per Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, 24 January 2007), would be Leadership in Energy and Environmental Design- (LEED®-) certifiable, and would include:

- Required demolition
- Site preparation
- Reinforced concrete slab and foundation
- Steel structure
- Masonry and metal panel exterior
- Standing seam metal roof system
- Fire protection
- Heating, ventilation, and air conditioning (HVAC)
- Electrical and plumbing systems
- Utility connections

All construction would be consistent with the base's Architectural Guidelines and Facilities Excellence Plan; further, construction would comply with applicable codes and laws, and Department of Defense (DoD) Antiterrorism/Force Protection requirements.

Construction activities would last approximately 18 months and are anticipated to result in the disturbance of approximately 50,000 sf for site preparation, grading, and staging activities. Construction equipment would be brought onsite and would remain onsite for the duration of their use. Best management practices (BMPs) to minimize environmental impacts (e.g., soil stockpiling, use of silt berms/fences, watering of exposed soils), preparation of management plans (e.g., Stormwater Pollution Prevention Plan, Erosion Control Plan, and Soils Management Plan), and worker training programs would be required and implemented during construction. Upon completion, all disturbed areas not supporting new facilities would be revegetated.

2.2.2 Operation and Maintenance

Long-term operation and maintenance of the additions to the Fitness Center Complex are not expected to generate any substantial amounts of additional traffic, parking requirements, or employment; approximately the same number of Fitness Center Complex users would frequent the facility; however, the users would have increased fitness options with the addition of the Aquatics Center and more space would be available to better accommodate existing activities and needs. A negligible increase in employment associated with Aquatics Center staff (e.g., lifeguards, pool manager, and pool/equipment maintenance amounting to less than 5 full-time equivalent employees) is expected.

2.3 ALTERNATIVE 1: NO LEED ELEMENTS

Additions and alterations to the Fitness Center Complex could be implemented without consideration or inclusion of LEED-certifiable elements. While such an approach could accelerate the construction timeline and reduce initial project-related capital outlay, it would be noncompliant with established policies (e.g., Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*) and could ultimately result in increased maintenance and operational requirements.

2.4 ALTERNATIVE 2: NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the USAF would not implement the Proposed Action and the Fitness Center Complex would remain in operation under its existing configuration and capacity. If the No-Action Alternative were selected, the physical conditioning and recreation programs, specifically Unit Training/Group Exercise, requisite to the “Fit to Fight” Program, would continue to be limited due to space restrictions. Inadequate spatial and programmatic demands adversely affect the morale, wellbeing, and retention rate of assigned military personnel. Deficiencies in these core areas would continue to complicate the facilitation of readiness and fitness of military members. Physical conditioning and recreational programs related to the indoor Aquatics Center/Lap Pool would continue to be curtailed by the current situation at the Fitness Center.

SECTION 3

AFFECTED ENVIRONMENT

This section describes relevant existing environmental conditions for resources potentially affected by the Proposed Action and identified alternatives. In compliance with guidelines established by the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and Title 32, Code of Federal Regulations (CFR) Part 989 (32 CFR 989), *Environmental Impact Analysis Process*, the description of the affected environment focuses on only those aspects potentially subject to impacts.

The U.S. Air Force (USAF) prepared and published an *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado* in November 2001; an accompanying Finding of No Significant Impact (FONSI) was signed on 15 November 2001. As a supplement to the *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado* (2001), this Environmental Assessment (EA) considers proposed Additions and Alterations (ADAL) to the Fitness Center Complex at Buckley Air Force Base (AFB) and evaluates potential environmental impacts of project enhancement to those resources. This EA provides a description of environmental conditions for the following environmental resources that would likely be affected by implementation of the Proposed Action or its alternatives:

- Air Quality
- Geological Resources
- Hazardous Materials and Wastes
- Safety and Occupational Health

Environmental resources that are anticipated to experience either no or negligible environmental impact under implementation of the Proposed Action or its alternatives, or those whose environmental conditions remain unchanged from the analysis presented in the *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado* (2001) are not examined in detail in this EA. These environmental resources include:

- Biological Resources

- Land Use
- Water Resources (including Wetlands and Floodplains)
- Cultural Resources
- Noise
- Utilities
- Transportation and Circulation
- Airspace Management
- Socioeconomics
- Environmental Justice
- Visual Resources

3.1 AIR QUALITY

This section describes air quality considerations and conditions in the area around Buckley AFB. The discussion addresses air quality standards and describes current air quality conditions in the region.

3.1.1 Definition of Resource

Air quality is affected by stationary sources (e.g., industrial development) and mobile sources (e.g., motor vehicles). Air quality at a given location is a function of several factors including the quantity and type of pollutants emitted locally and regionally, and the dispersion rates of pollutants in the region. Primary factors affecting pollutant dispersion are wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions, and topography.

3.1.1.1 Criteria Pollutants

Air quality in a given location is determined by the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the U.S. Environmental Protection Agency (USEPA) for criteria pollutants, including: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter equal to or less than ten microns in diameter (PM₁₀) and 2.5 microns in diameter (PM_{2.5}), and lead (Pb). NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare.

3.1.2 Existing Conditions

3.1.2.1 Climate

Average temperatures at Buckley AFB generally range from approximately 29 degrees Fahrenheit (°F) in the winter months to approximately 70 °F in the summer months with an average annual temperature of 49 °F. Average annual rainfall at Buckley AFB is 14.34 inches. More rainfall occurs in the spring months, with a peak monthly average of 2.44 inches in May; the lowest monthly average rainfall of 0.38 inches occurs in February (HAMweather 2009). Snow season begins in the fall and extends through spring; the average annual snowfall at the Denver Airport is 59.6 inches, with a peak monthly average of 12.6 inches in March (Western Regional Climate Center [WRCC] 2009a).

Buckley AFB is located in a fairly breezy area. For each month of the year, the average wind speed is at least 7.6 miles per hour (mph) and the annual average wind speed is 8.4 mph. Spring tends to bring stronger winds; the windiest months, March and April, exhibit an average speed of 9.7 mph. The prevailing wind direction is from the south throughout the year. However, local topography and the passage of storm fronts can greatly influence wind speed and direction on a short-term basis (WRCC 2009b, 2009c).

3.1.2.2 Local Air Quality

Buckley AFB is located in Arapahoe County, Colorado, within the Metropolitan Denver Air Quality Control Region (AQCR). The Region of Influence (ROI) for this resource is the entire Denver AQCR. A geographic area with air quality that is cleaner than the primary standard is called an "attainment" area; areas that do not meet the primary standard are called "nonattainment" areas. Table 3-1 summarizes the attainment status for the Denver AQCR.

3.1.2.3 Emissions at Buckley AFB

Buckley AFB operates under Title V Operating Permit 95OPAR118 that regulates air emissions from stationary sources. Buckley AFB is a major source of criteria pollutants under the Title V program because it has the potential to emit more

1 **Table 3-1. Denver AQCR Designation for Criteria Pollutants**

National Ambient Air Quality Standard Criteria Pollutant	Designation
Carbon monoxide (CO)	Attainment/Maintenance
Nitrogen dioxide (NO ₂)	Attainment
8-hour ozone (O ₃) (as measured by precursors nitrogen oxides (NO _x) and volatile organic compounds (VOC))	Non-attainment
Particulate matter with aerodynamic diameter of 10 micrometers or less (PM ₁₀)	Attainment/Maintenance
Particulate matter with aerodynamic diameter of 2.5 micrometers or less (PM _{2.5})	Attainment
Sulfur (measured as sulfur dioxide, SO ₂)	Attainment
Lead (Pb)	Attainment

2 Source: Colorado Air Quality Control Commission [CAQCC], 2005a, 2005b, 2005c, and 2007.

3 than 100 tons of the criteria pollutants CO and nitrogen oxides (NO_x). Buckley
4 AFB is a minor source of CO, SO₂, volatile organic compounds (VOCs), and PM₁₀
5 under the Prevention of Significant Deterioration (PSD) provisions, with a
6 potential to emit of less than 250 tons per year (tpy) of these pollutants. Buckley
7 AFB is a PSD synthetic minor source of NO_x because the base accepted permit
8 limits that establish the potential to emit for this pollutant at less than 250 tons
9 per year.

10 Mobile sources are not regulated under the Clean Air Act, Title V operating
11 permit, or the Colorado operating permit program, but are considerable
12 components of total base air emissions. These emissions, therefore, are
13 periodically inventoried as part of Buckley AFB's air quality management
14 program. Emissions from mobile sources include CO, NO_x, Pb, sulfur oxides
15 (SO_x), PM₁₀, and VOCs. In addition, motorized Air Force vehicles and portable
16 equipment are considered mobile sources, including equipment operated and
17 refueled under vehicle inspection and maintenance provisions.

18 Buckley AFB currently emits hazardous air pollutants (HAP) during the course
19 of base activities such as storing fuel, using paints, and running generators.
20 However, Buckley AFB is not a major source of HAP. These emissions are
21 estimated annually in the Buckley AFB Air Emission Inventory. The air
22 emissions summary for mobile and stationary sources at Buckley AFB is
23 presented in Table 3-2.

Table 3-2. Buckley AFB Mobile and Stationary Source Air Emissions Inventory

Pollutant Emission Sources	CO (tpy)	SO _x (tpy)	NO _x (tpy)	VOC (tpy)	PM ₁₀ (tpy)	Pb (tpy)	HAP (tpy)
Buckley AFB 2008 Point and Fugitive Stationary Source Emissions ¹	19.13	0.68	39.82	22.07	5.71	0.0	2.27
Buckley AFB 2007 Mobile Source Emissions ²	290.20	56.87	7.58	8.02	2.1	81.25	n/a

¹ Source: Buckley AFB 2009a.

² Source: Buckley AFB 2009b.

Note: Emissions from construction projects and driving on unpaved roads not included since these are not directly related to "driving" vehicles.

Buckley AFB also uses Class I and Class II Ozone-Depleting Substances (ODS). Class I ODS are currently used for fire suppression. Class II ODS are used as a refrigerant in air conditioners. The current policy at Buckley AFB is to prohibit the use of Class I or Class II ODS for new construction projects.

3.2 GEOLOGICAL RESOURCES

3.2.1 Definition of Resource

Geological resources consist of surface and subsurface materials and their properties. Principal geologic factors affecting the ability to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography. The term *soil*, in general, refers to unconsolidated materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability for the ground to support man-made structures. Soils typically are described in terms of their complex type, slope, physical characteristics, and relative compatibility or constraining properties with regard to particular construction activities and types of land use. Topography is the change in elevation over the surface of a land area. An area's topography is influenced by many factors, including human activity, underlying geologic material, seismic activity, climatic conditions, and erosion. A discussion of topography typically encompasses a description of surface elevations, slope, and distinct physiographic features (e.g., mountains) and their influence on human activities.

3.2.2 Existing Conditions

3.2.2.1 Buckley AFB

Geology

Buckley AFB is located within the Denver Basin, a structural depression that is 300 miles long and 200 miles wide. The Denver Basin consists of geologic layers in excess of 13,000 feet thick that range in age from Late Pennsylvanian through Quaternary. Five principal stratigraphic units are present within the Denver Basin: Fox Hills Sandstone, Laramie Formation, Arapahoe Formation, Denver Formation, and Dawson Arkose (Buckley AFB 2004). The basal (compact) unit of the Denver Basin is the Pierre Shale that underlies the Fox Hills Sandstone (Robson 1983). Surficial material consists of several layers of unconsolidated alluvial gravels, sands, clays, and eolian material (i.e., material deposited as a

1 result of wind processes) that were deposited in response to glacial and
2 interglacial events (Buckley AFB 2004).

3 Coal reserves are present beneath the surface of Buckley AFB; however, these
4 reserves are economically non-recoverable due to their low quality and depth
5 beneath the surface. Although mineral reserves (i.e., sand and gravel) are
6 present in the area, economically desirable reserves do not exist on Buckley AFB
7 (Buckley AFB 2004). No other substantial mineral resources are present at
8 Buckley AFB.

9 Topography

10 Topography pertains to the general shape and arrangement of a land surface,
11 including its height and the position of its natural and human-made features.
12 Buckley AFB is west of the Great Plains within the western portion of the central
13 high plains of Colorado. The region is surrounded on three sides by higher
14 terrain areas including the Palmer Lake Divide to the south, the Rampart Range
15 and Rocky Mountains to the west, and the Cheyenne Ridge to the north (Buckley
16 AFB 2004). The topography of Buckley AFB comprises relatively flat land and
17 rolling upland. Elevations range from 5,650 feet in the southeastern corner to
18 5,500 feet in the northwestern corner of the installation (Buckley AFB 2004).

19 Soils

20 The major soil-mapping units present on Buckley AFB include the Fondis-Weld,
21 Alluvial Land-Nunn, and Renohill-Buick-Little associations (U.S. Department of
22 Agriculture/Soil Conservation Service [USDA/SCS] 1971). Other areas on the
23 installation have been identified as gravel pits, rock outcrop complexes, sandy
24 alluvial land, and terrace escarpments (USDA/SCS 1971).

25 The Fondis-Weld association mapping unit, composed of the Fondis and Weld
26 soil series, covers the most surface area at Buckley AFB. This association consists
27 of deep loamy soils that formed mainly in silty material deposited by the wind
28 (loess). The Fondis soils are gently sloping (1 to 5 percent slope), well-drained,
29 fertile upland soils with a high water-holding capacity (0.25 inch per inch of soil)
30 and moderately slow permeability (less than 0.63 inch per hour), and are

1 susceptible to wind and water erosion. The Weld soil series consists of deep,
2 well-drained, level to gently sloping (0 to 3 percent slope) soils that occur mainly
3 in uplands. The Weld soils have a moderate rate of water intake and a high
4 available water-holding capacity (0.20 to 0.25 inch per inch of soil). The most
5 common soils in the Buckley AFB area are the Fondis silt loam and the Fondis-
6 Colby silt loam (USDA/SCS 1971). Fondis silt loam (1 to 3 percent slopes)
7 comprises the only soil type located at and within the vicinity of the Proposed
8 Action project site.

3.3 HAZARDOUS MATERIALS AND WASTES

Hazardous materials are defined as substances with strong physical properties of ignitability, corrosivity, reactivity, or toxicity that may cause an increase in mortality, a serious irreversible illness, incapacitating reversible illness, or pose a substantial threat to human health or the environment. Hazardous wastes are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health or the environment.

3.3.1 Existing Conditions

3.3.1.1 Environmental Restoration Program

The Department of Defense (DoD) has developed the Environmental Restoration Program (ERP) to facilitate thorough investigation and cleanup of contaminated sites located at military installations. The ERP at Buckley AFB includes Installation Restoration Program (IRP) Sites where hazardous wastes, substances or pollutants, radioactive wastes, or petroleum were released and Military Munitions Response Program (MMRP) Sites where munitions and related contamination were released at closed ranges. The Buckley AFB ERP includes nine active IRP sites, two closed IRP sites, and nine MMRP sites (Buckley AFB 2009b). The Fitness Center Complex is not located within or adjacent to any IRP or MMRP sites (Buckley AFB 2008c).

3.3.1.2 Asbestos

Asbestos is a mineral fiber that was historically added to products to strengthen them and provide heat insulation and fire resistance. Breathing high levels of asbestos has been associated with some types of cancer. Many building products contained asbestos prior to the 1970s.

Air Force Instruction (AFI) 32-1052, *Facility Asbestos Management*, provides direction for the management of asbestos-containing material (ACM) on USAF installations. AFI 32-1052 outlines requirements for an asbestos management plan and an asbestos operating plan. The objective of the asbestos management plan is to document the status and condition of ACM within an installation. The

1 asbestos operating plan provides direction for conducting asbestos-related work
2 within the installation.

3 An "asbestos area" has been identified in the northwest portion of Buckley AFB.
4 Within this area, ACM is present within the soil to a depth of approximately 2
5 feet. The ACM originated from demolition debris (i.e., concrete, flooring, tile,
6 siding, roofing material, pipe insulation, and other building materials) that was
7 left in place following the demolition of a World War II-era hospital/dormitory
8 complex. The demolition date is unknown; however, based on review of aerial
9 photographs, the complex was demolished prior to 1985. Prior to construction of
10 the Base Exchange facility and Fitness Center Complex, multiple investigations,
11 beginning in 1999, were performed to determine the presence of ACM in surface
12 and shallow subsurface demolition debris (U.S. Army Corps of Engineers 2003).
13 In September 2003, the Colorado Department of Public Health and Environment
14 (CDPHE) issued Buckley AFB Compliance Order #03-09-30-01 for previous
15 violations related to the handling and storage of ACM during construction
16 activities in this area. As a requirement of the Compliance Order, Buckley AFB
17 submitted an Asbestos Management Plan which identifies procedures to be
18 implemented when any asbestos contamination is encountered at the base.

19 The Fitness Center Complex lies within this asbestos area. Based on soil samples
20 collected within the proposed footprint of the Fitness Center Complex ADAL,
21 asbestos is present in the soil in trace amounts (less than 0.10 percent). Some
22 samples collected within approximately 50 feet of the Fitness Center Complex
23 ADAL resulted in higher quantities of asbestos (0.10 to 4.60 percent) (U.S. Army
24 Corps of Engineers 2003).

25 3.3.1.3 Radon

26 Radon is a colorless, odorless radioactive gas that results from the natural decay
27 of uranium. Radon is known to cause cancer. Arapahoe County, Colorado is
28 mapped as Zone 1 – high radon potential (probable indoor radon average greater
29 than 4 picoCuries of radon per liter of air (CDPHE 2009). Radon-resistant
30 construction techniques can be used to prevent radon entry into buildings.

3.4 SAFETY AND OCCUPATIONAL HEALTH

3.4.1 Definition of Resource

The primary safety issue affecting military facilities is the consideration of Antiterrorism/Force Protection (AT/FP) requirements. Requirements include mandated setbacks of parking areas from buildings, increased security measures such as barricades at military facility entrances and exits, and AT/FP-compliant perimeter fences. Requirements also include mandates regarding emergency notification systems and procedures. The *United States Air Force Installation Force Protection Guide* contains information on installation planning, engineering design, and construction techniques that can preclude or minimize the effects of terrorist attacks upon existing and future facilities. It addresses the comprehensive planning process, facility site design, and building systems design. Additional criteria are available in *Unified Facilities Criteria* (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*.

Use of and exposure to hazardous chemicals (e.g., those that might be used in a swimming pool environment) are regulated by AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health* (AFOSH) Program.

Other safety concerns at Buckley AFB are:

- Explosives Safety Zones (quantity-distance [QD] arcs) associated with munitions storage
- Clear Zones and Accident Potential Zones associated with the airfield.

The proposed Fitness Center Complex ADAL is not located within or in the vicinity of any QD arcs, Clear Zones, or Accident Potential Zones; therefore, these concerns are not discussed further.

3.4.2 Existing Conditions

3.4.2.1 Antiterrorism/Force Protection

Buckley AFB is bound by a secure perimeter fence and access on-base is provided through only two (2) security-controlled entrance gates. The Fitness

Center Complex is currently in compliance with UFC 4-010-01 *DoD Minimum Antiterrorism Standards for Buildings* that require minimum setbacks of various distances, including:

- 82-foot (25-meter) standoff between unsecured parking and inhabited structures
- 33-foot (10-meter) object-free area with limited development around structures

At present, the Fitness Center Complex has adequate setbacks from the parking lots located to the south of the facility, with an approximately 85-foot standoff to the south on the western end of the facility and an approximately 110-foot standoff to the south on the eastern end of the facility. The Fitness Center Complex is also set back from Telluride Avenue, located to the west, by approximately 85 feet, and has gate service entry points to the north and west of the facility. In addition, the Fitness Center Complex is surrounded by open, object-free areas and the closest developed structure is located approximately 145 feet to the east.

3.4.2.2 Occupational Health

All contractors performing construction activities are responsible for following ground safety and Occupational Safety and Health Administration (OSHA) regulations and are required to implement construction activities in a manner that does not pose any risk to workers or personnel. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and use and availability of Material Safety Data Sheets. Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplaces; to monitor exposure to workplace chemicals (e.g., asbestos, lead, hazardous material), physical (e.g., noise propagation), and biological (e.g., infectious waste) agents; to recommend and evaluate controls (e.g., ventilation, respirators) to ensure personnel are properly protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers engaged in hazardous waste work or subject to any accidental chemical exposures.

1 The Fitness Center Complex lies within this asbestos area. Based on soil samples
2 collected within the proposed footprint of the Fitness Center Complex ADAL,
3 asbestos is present in the soil in trace amounts (less than 0.10 percent). Some
4 samples collected within approximately 50 feet of the Fitness Center Complex
5 ADAL resulted in higher quantities of asbestos (0.10 to 4.60 percent) (U.S. Army
6 Corps of Engineers 2003).

7 The region of influence for potential occupational safety and health impacts is
8 the areas (including access roads) immediately surrounding the Fitness Center
9 Complex. AFI 91-301, *Air Force Occupational and Environmental Safety, Fire*
10 *Protection, and Health (AFOSH) Program*, establishes the Air Force guidelines,
11 policy, and procedures to protect Air Force resources and military and civilian
12 personnel from occupational deaths, injuries, or illnesses. AFI 91-301
13 implements the Department of Labor, OSHA standards and further prescribed
14 Air Force occupational and environmental safety, fire protection, and health
15 requirements. Both OSHA and AFI 91-301 standards apply to nonmilitary-
16 unique workplaces, operations, equipment, and systems. Some guidance
17 contained in the AFI 91-301 standards has been tailored to apply to a specific Air
18 Force operation; however, the safety principles involved are generally universal.
19 OSHA standards do not apply to military-unique workplaces (e.g., military
20 weapons, aircraft, marine vessels, missiles, ordnance, etc.), operations,
21 equipment, and systems. However, the OSHA standards apply insofar as is
22 possible, practicable, and consistent with the military requirements.

SECTION 4

ENVIRONMENTAL CONSEQUENCES

Environmental impacts which would result from implementation of the Proposed Action at Buckley Air Force Base (AFB) by the U.S. Air Force (USAF) are evaluated in this section. Analyses are presented by resource area, as described in Section 3, *Affected Environment*. As a supplement to the *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado* (2001), this Environmental Assessment (EA) considers proposed Additions and Alterations (ADAL) to the Fitness Center Complex at Buckley AFB and describes potential environmental impacts of project enhancement to those resources. This EA provides an analysis of environmental impacts for the following environmental resources that would likely be affected by implementation of the Proposed Action or its alternatives:

- Air Quality
- Geological Resources
- Hazardous Materials and Wastes
- Safety and Occupational Health

Environmental resources that are anticipated to experience either no or negligible environmental impact under implementation of the Proposed Action or its alternatives, or those whose environmental conditions remain unchanged from the analysis presented in the *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado* (2001) are not analyzed in detail in this EA. These environmental resources include:

- Biological Resources
- Land Use
- Water Resources (including Wetlands and Floodplains)
- Cultural Resources
- Noise
- Utilities
- Transportation and Circulation
- Airspace Management
- Socioeconomics

- Environmental Justice
- Visual Resources

The definitions for impact intensity thresholds used in this document are as follows:

- **Negligible.** Impacts on the resource, although anticipated, would be difficult to observe and are not measurable.
- **Minor.** Impacts on the resources would be detectible upon close scrutiny or would result in small but measurable changes to the resource.
- **Moderate.** Impacts on the resource would be easily observed and measurable, but would be localized or short-term (equal to or less than 2 years).
- **Major.** Impacts on the resource would be easily observed and measurable, widespread, and long-term (more than 2 years).

4.1 AIR QUALITY

4.2.1 Approach to Analysis

Air Force Instruction (AFI) 32-7040, Air Quality Compliance and Resource Management, provides a framework for ensuring that USAF actions conform to appropriate implementation plans. Section 2.4 of AFI 32-7040, Conformity Planning, ensures that such actions would conform to the applicable implementation plan through the U.S. Environmental Protection Agency (USEPA) General Conformity Rule. In the case of the Proposed Action, conformity with the Colorado State Implementation Plan (SIP) would be required. Section 2.5, National Environmental Policy Act (NEPA) and Environmental Impact Analysis Process Planning, outlines the requirements under NEPA for analysis of air quality impacts with respect to the Prevention of Significant Deterioration (PSD)/New Source Review (NSR) (40 Code of Federal Regulations [CFR] Part 51), hazardous air pollutants (HAP) emissions, and emissions of any other regulated pollutants under the Clean Air Act (CAA) such as Ozone Depleting Substances (ODS) that will result from implementation of the Proposed Action. Direct and indirect emissions of criteria pollutants or their precursors associated with the Proposed Action must be calculated for all non-

1 exempt emission sources, including mobile and stationary, as well as
2 construction-phase emissions.

3 With respect to the General Conformity Rule, effects on air quality would be
4 considered major if the Proposed Action would result in an increase of the
5 Metropolitan Denver Air Quality Control Region's (AQCR's) emissions
6 inventory by 10 percent or more, or if such emissions exceed *de minimis* threshold
7 levels established in 40 CFR 93.153(b) for individual nonattainment pollutants
8 (Ozone [O₃]) or maintenance pollutants (carbon monoxide [CO] and particulate
9 matter equal or less than 10 microns in diameter [PM₁₀]).

10 **4.2.2 Impacts**

11 4.2.2.1 Proposed Action

12 Fugitive Dust Emissions

13 Under the Proposed Action, fugitive dust would be generated from grading,
14 demolition, installation improvements and building activities, as well as
15 combustion emissions from construction-related vehicles and equipment.
16 Proposed ADAL implementation would require site preparation, ground
17 disturbance, and construction support (this would include clearing building
18 footprints of vegetation and establishing construction staging areas). Dust
19 emissions generated from such activity can vary substantially depending on
20 levels of activity, specific operations, and prevailing meteorological conditions.
21 Using conservatively high estimates (based on moderate activity levels,
22 moderate silt content in affected soils, and a temperate climate), the standard
23 dust emission factor for construction activity is estimated at 1.2 tons of dust
24 generated per acre per month of activity (USEPA 1995). This factor is referenced
25 to total suspended particulates, instead of specifically PM₁₀ or PM_{2.5} (particulate
26 matter equal or less than 2.5 microns in diameter), and consequently results in
27 conservatively high estimates. Based on the maximum estimated acreage that
28 would be disturbed at any one time (1.15 acres or 50,000 square feet), a projected
29 total of about 1.38 tons per month of dust would be generated if all construction
30 activities were implemented simultaneously.

1 Increased fugitive dust (i.e., PM₁₀ emissions) resulting from activities under the
2 Proposed Action would involve short-term adverse impacts that could be
3 reduced through standard dust minimization practices (e.g., regularly watering
4 exposed soils, soil stockpiling, and soil stabilization). These standard dust
5 minimization measures can reduce dust generation by 75 percent, thereby
6 reducing dust emissions to approximately 0.34 tons per month (USEPA 1995).
7 Although any substantial increase in PM₁₀ emissions is inherently adverse,
8 implementation of these dust minimization measures would limit the total
9 quantity generated during project implementation. Increased PM₁₀ emissions
10 associated with the Proposed Action would be short-term and temporary, and
11 would be minimized using dust suppression techniques; therefore impacts to air
12 quality would be negligible.

13 Combustion Emissions

14 Combustion emissions associated with construction-related vehicles and
15 equipment would be minimal because most vehicles would be driven to and
16 kept at work sites for the duration of construction activities. Further, as is the
17 case with PM₁₀ emissions associated with site preparation activities, emissions
18 generated by construction equipment would be temporary and short-term;
19 therefore, no major impact to air quality would occur as a result of use and
20 maintenance of construction-related vehicles or equipment.

21 Projected combustion emissions under implementation of the Proposed Action
22 are listed in Table 4-1; they are based on the scenario of 10-hour workdays, five
23 days per week, for simultaneous construction activity over the course of one year
24 (52 weeks). Since a specific equipment list and horsepower rating for the
25 equipment is not yet determined, emission factors were representative of a fleet-
26 wide average, and a standard equipment list for construction and demolition
27 was used. See *Appendix B* for a full list of assumptions and emission factors used
28 in this analysis.

Table 4-1. Projected Combustion Emissions for Construction and Operational Activities (total tons)

Equipment	Emissions				
	CO	NO _x	PM ₁₀	SO _x	VOCs
Grader	0.74	2.11	0.11	0.36	0.19
Loader	0.55	1.12	0.11	0.15	0.17
Bobcat	0.35	0.66	0.07	0.00	0.12
Dozer	1.57	3.95	0.16	0.59	0.30
Paving equipment	0.54	1.25	0.09	0.19	0.15
Paver	0.58	1.16	0.09	0.21	0.16
<i>Emissions from Construction</i>	4.33	10.25	0.63	1.50	1.09
<i>Emissions from Operation</i>	0.05	0.06	0.05	0.05	0.00
Total Combustion Emissions	4.38	10.31	0.68	1.55	1.09
De minimis threshold value	100	100	100	N/A	100
10 percent of Denver Metropolitan AQCR Emissions	67,783	10,338	6,017	1,853	14,499

Note: See Appendix B for a full list of assumptions and emission factors used in this analysis.

Sources: Buckley AFB 2009a and 2009b.

Operational Emissions

Potential operational emissions at the proposed Aquatics Center and Lap Pool would be associated with furnaces and boilers used for pool heating. Using estimates for natural gas usage from a similar facility at Los Angeles AFB, operational emissions for all criteria pollutants were calculated to be well below 0.1 ton per year (see *Appendix B* for estimated emissions, a full list of assumptions, and emission factors used in this analysis). It should be noted that emission factors used in these calculations are based on established emission factors for older furnaces. Because the Proposed Action would incorporate Leadership in Energy and Environmental Design (LEED®) standards in design and operation and would potentially utilize high efficiency furnaces, these calculations represent a worst-case scenario for operational emissions. Existing stationary emission sources at the Fitness Center Complex include boilers and generators; the two other proposed additions to the facility (Group Exercise Addition and Support and Storage Addition) would not be expected to measurably increase the output of these emission sources.

1 Long-term operation and maintenance of the ADAL to the Fitness Center
2 Complex are expected to generate minor additional vehicle traffic and related
3 operational emissions; approximately the same number of Fitness Center
4 Complex users would frequent the facility. A negligible increase in employment
5 associated with Aquatics Center staff (e.g., lifeguards, pool manager, and
6 pool/equipment maintenance amounting to less than 5 full-time equivalent
7 employees) would be expected. Therefore, operational emissions associated with
8 ADAL to the Fitness Center Complex are expected to be negligible.

9 General Conformity

10 Emissions from construction and operational related activities associated with
11 the Proposed Action would be well below *de minimis* thresholds values for O₃,
12 CO, and PM₁₀ (i.e., the only criteria pollutants for which the Denver AQCR is
13 currently not in attainment for); therefore a General Conformity determination
14 would not be required (refer to Table 4-1). In addition, criteria pollutant
15 emissions resulting from the Proposed Action would not exceed 10 percent of the
16 regional emissions inventories. Therefore, implementation of the Proposed
17 Action would result in minor impacts.

18 4.2.2.2 Alternative 1: No LEED® Elements

19 Under this alternative Fitness Center Complex ADAL would be implemented as
20 described under the Proposed Action; however, consideration or inclusion of
21 LEED®-certifiable elements would not occur. Because operational air emissions
22 for the Proposed Action were calculated as a worst-case scenario assuming non-
23 LEED® compliant heating equipment, impacts to air quality would remain
24 minor as described in Section 4.2.2.1.

25 4.2.2.3 Alternative 2: No-Action Alternative

26 Under this alternative, no construction, demolition, or introduction of additional
27 emission sources would occur at the installation; therefore, no impacts to air
28 quality would result. Air quality, as described in Section 3.2, would remain
29 unchanged.

1 **4.2 GEOLOGICAL RESOURCES**

2 **4.2.1 Approach to Analysis**

3 Protection of unique geological features, minimization of soil erosion, and the
4 siting of facilities in relation to potential geologic hazards are considered when
5 evaluating impacts of a Proposed Action on geological resources. Generally,
6 such impacts can be avoided or minimized if proper construction techniques,
7 erosion control measures, and structural engineering designs are incorporated
8 into project development.

9 Analysis of potential impacts to geological resources typically includes:
10 1) identification and description of resources that could potentially be affected;
11 2) examination of the Proposed Action and the potential effects this action may
12 have on the resource; and 3) provision of minimization measures in the event
13 that potentially major impacts are identified.

14 **4.2.2 Impacts**

15 4.2.2.1 Proposed Action

16 Geology

17 Potential geological impacts associated with the proposed Fitness Center
18 Complex ADAL would be limited to ground-disturbing activities (i.e., during
19 site preparation and construction). Short-term, minor impacts would result from
20 proposed construction and demolition projects; however, these activities would
21 take place on previously disturbed land which is capable of supporting such
22 development. Proposed projects would be localized and would have negligible
23 impacts on sensitive or regional geologic or physiographic features.

24 Soils

25 All construction and demolition activities under the Proposed Action would take
26 place on Fondis silt loam (1-3 percent slopes) soils in previously disturbed areas
27 that have been physically altered (e.g., cut, graded, or covered) or removed and
28 replaced by imported fill to support establishment and development of the
29 Fitness Center Complex. Hence, the soils are considered fully capable of

1 supporting the proposed Fitness Center Complex ADAL and negligible impacts
2 are expected to result.

3 During construction, incorporation of Best Management Practices (BMPs) would
4 limit any impacts to soils which may result from construction activities. Dust
5 from construction activities would be minimized by watering and/or soil
6 stockpiling, thereby reducing the amount of exposed soil to negligible levels.
7 Areas where construction and demolition are proposed are not utilized for
8 agricultural purposes and although coal reserves are present beneath Buckley
9 AFB, these reserves are economically non-recoverable due to their low quality
10 and depth beneath the surface. As a result, impacts to soils under the Proposed
11 Action would be limited to construction-related activities and are expected to be
12 short-term and negligible.

13 Topography

14 All construction activities proposed within the installation would occur on
15 previously disturbed land, which is capable of supporting such development.
16 Topography within the proposed construction areas is level and does not pose an
17 erosion hazard under the Proposed Action. Therefore, impacts to topography
18 resulting from implementation of the Proposed Action would be negligible.

19 4.2.2.2 Alternative 1: No LEED® Elements

20 Under this alternative Fitness Center Complex ADAL would be implemented as
21 described under the Proposed Action; however, consideration or inclusion of
22 LEED®-certifiable elements would not occur. Consequently, all impacts related
23 to geology, soils, and topography under Alternative 1 would be the same as the
24 Proposed Action, negligible.

25 4.2.2.3 Alternative 2: No-Action Alternative

26 If the No-Action Alternative were selected, no construction or demolition
27 activities would be implemented, and no changes to existing geological resources
28 at Buckley AFB (as described in Section 3.2, *Geological Resources*) would occur.

- 1 Therefore, no impacts to geological resources with result from selection of this
- 2 alternative.

4.3 HAZARDOUS MATERIALS AND WASTES

4.3.1 Approach to Analysis

Numerous local, state, and Federal laws regulate the storage, handling, disposal, and transportation of hazardous materials and wastes; the primary purpose of these laws is to protect public health and the environment. The significance of potential impacts associated with hazardous substances is based on their toxicity, ignitability, and corrosivity. Impacts associated with hazardous materials and wastes would be considered major if the storage, use, transportation, or disposal of hazardous substances substantially increases the human health risk or environmental exposure.

4.3.2 Impacts

4.3.2.1 Proposed Action

During implementation of the Proposed Action, a temporary increase in the storage of hazardous materials and waste would occur through the duration of construction and renovation activities. However, the increase in construction-related hazardous materials and waste would be temporary and short-term.

The Proposed Action would involve the construction of the Fitness Center Complex ADAL adjacent to the existing Fitness Center Complex. The Proposed Action location is not within or adjacent to Installation Restoration Program (IRP) or Military Munitions Response Program (MMRP) sites; however, it is within the "asbestos area" identified in the northwest portion of Buckley AFB. Asbestos Containing Material (ACM) is present within the soil to a depth of approximately 2 feet and would be encountered during construction. All ACM encountered in the soil during construction would be handled in accordance with Buckley AFB's *Draft Soil Characterization and Management Plan* (Buckley AFB 2009c) which outlines special ACM handling requirements for on-site haul routes, project site preparation, excavation, transportation, disposal, and construction crew training on handling and disposal of ACM. In addition, storage and disposal of ACM would comply with the base's Asbestos Management Plan, as required by Compliance Order #03-09-30-01. If a significant friable material discovery has been made, based on a visual

1 assessment by a Colorado-certified Asbestos Building Inspector, the control of
2 fugitive emissions from ACM contaminated soils will be performed in
3 accordance with applicable Occupational Safety and Health Administration
4 (OSHA) protocols in order to minimize the risk of asbestos exposure to workers
5 and the general public. Further, in the event that ACM disturbed during
6 construction activities includes more than 260 linear feet of piping, 160 square
7 feet of surfaces, or a volume equivalent to 55 gallons, abatement procedures
8 would comply with Colorado Air Regulation Number 8, Part B. Therefore, with
9 proper control measures and construction crew training, exposure to asbestos
10 would be minimized and asbestos waste would be properly disposed.

11 Radon-resistant construction techniques would be implemented to prevent
12 radon entry to the proposed facilities. The proposed Fitness Center Complex
13 ADAL would not be constructed with a basement, and the pool would be
14 constructed to prevent radon entry. Therefore, the Proposed Action would not
15 result in radon exposure.

16 The Lap Pool would be cleaned and maintained to meet applicable public health
17 standards. A disinfection system would be determined during final design.
18 Chemicals required for cleaning and maintaining the pool would comply with
19 appropriate regulations for storage and use.

20 4.3.2.2 Alternative 1: No LEED® Elements

21 Under this alternative Fitness Center Complex ADAL would be implemented as
22 described under the Proposed Action; however, consideration or inclusion of
23 LEED®-certifiable elements would not occur. Consequently, impacts related to
24 hazardous materials and wastes under Alternative 1 would be slightly higher
25 than the Proposed Action as this alternative would not include using materials
26 that are environmentally friendly and less hazardous during construction (e.g.,
27 using zero VOC versus traditional latex paint). However, the increase in
28 construction-related hazardous materials and waste would be temporary and
29 short term.

1 4.3.2.3 Alternative 2: No-Action Alternative

2 Under the No-Action Alternative the Fitness Center Complex ADAL would not
3 be constructed. ACM that is present in the soil near the existing Fitness Center
4 Complex would remain in soil. No construction would occur; therefore, the No-
5 Action Alternative would not result in radon-related impacts. Since the Lap Pool
6 would not be constructed under the No-Action Alternative, no pool disinfection
7 chemicals would be required.

4.4 SAFETY AND OCCUPATIONAL HEALTH

4.4.1 Approach to Analysis

If implementation of the Proposed Action would 1) result in incompatible land use with regard to safety criteria such as Antiterrorism/Force Protection (AT/FP) standards, quantity-distance (QD) arcs associated with munitions storage, Clear Zones and/or Accident Potential Zones associated with the airfield, or 2) result in deterioration of occupation health conditions, impacts would be considered major. Implementation of the Fitness Center Complex ADAL is not proposed within or in the vicinity of any QD arcs, Clear Zones, or Accident Potential Zones; therefore, these concerns are not discussed further.

4.4.2 Impacts

4.4.2.1 Proposed Action

Antiterrorism/Force Protection

Construction of proposed Fitness Center Complex ADAL facilities would incorporate appropriate AT/FP standards including the required 82-foot (25-meter) setback between unsecured parking to the south and Telluride Avenue to the west. Additionally, the proposed Fitness Center Complex ADAL would be surrounded by open, object-free areas and the closest developed structure would be located approximately 65 feet to the east, outside of the AT/FP-required 33-foot (10-meter) object-free standoff area. As a result, no impacts with regard to AT/FP standards would occur under the Proposed Action.

Occupational Health

Construction and demolition activities associated with the Proposed Action would conform with all OSHA regulations including industrial hygiene programs to address exposure to hazardous materials, use of personal protective equipment, and incorporation and use of appropriate Material Safety Data Sheets. The Lap Pool would be cleaned and maintained to meet applicable public health standards. A disinfection system would be determined during final design. Chemicals required for cleaning and maintaining the pool would comply with appropriate regulations for storage and use. In addition, all ACM

encountered in the soil during construction would be handled in accordance with Buckley AFB's *Draft Soil Characterization and Management Plan* (Buckley AFB 2009c) which outlines requirements for construction crew training on handling and disposal of ACM in order to minimize the risk of asbestos exposure during construction. Further, storage and disposal of ACM would also comply with the base's Asbestos Management plan, as required by Compliance Order #03-09-30-01. Therefore, with regard to occupational health, implementation of the Proposed Action would result in negligible impacts.

4.4.2.2 Alternative 1: No LEED® Elements

Under this alternative Fitness Center Complex ADAL would be implemented as described under the Proposed Action; however, consideration or inclusion of LEED®-certifiable elements would not occur. Consequently, all impacts related to safety and occupational health under Alternative 1 would be the same as the Proposed Action, negligible.

4.4.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the proposed Fitness Center Complex ADAL would not be implemented. Existing safety and occupational health conditions would remain as described in Section 3.4, *Safety*, and no impacts would occur.

1 is the geographic center of the City of Aurora and, on the east side of the
2 highway, the Aurora Mall, Aurora City Place, and Abilene power corridors
3 comprise a regional retail location. Midway in the corridor lies the Aurora City
4 Center, historically planned as the City's downtown area.

5 Important development associated with the City Center includes the Aurora
6 Municipal Center (complete), Arapahoe County administrative annex
7 (complete), new ADT company office building, a 355-unit townhouse and
8 elevator apartment complex (The Village), a 225-residential unit project (The
9 Retreat at City Center), and a revitalization of the Aurora Mall. Additionally, the
10 Regional Transportation District purchased property for development of a new
11 bus transfer facility at the City Center; a light rail station could potentially be
12 constructed there in the future. Finally, a single-family housing development
13 comprising 36.5 acres is under construction approximately 0.5 mile west of
14 Buckley AFB (City of Aurora Planning Department 2003, 2009).

15 E-470 Corridor Strategic Area - This area is located adjacent to the eastern and
16 extreme southern boundary of the installation and includes the prairie areas east
17 of the developed portion of the city where development is expected through
18 2020. The City of Aurora E-470 Land Use Study identifies regional activity
19 centers and theme areas within the corridor (City of Aurora Planning
20 Department 2003).

21 Strategies for development in the E-470 Corridor Strategic Area include locating
22 major office park, retail centers, and airport-related activities in the corridor and
23 working with the counties to ensure that critical, undeveloped enclaves of land
24 in the corridor are annexed to the City of Aurora.

25 Planned land use for the entire area abutting the eastern boundary of Buckley
26 AFB is small-scale office development, designated to include construction of
27 limited industrial and commercial services (City of Aurora Planning Department
28 2003). Regionally, a residential development comprising 435 acres is under
29 construction within 0.5 mile of the southern boundary of Buckley AFB. Just east
30 of this development, a 490-acre residential development is also under
31 construction.

5.2 ON-BASE ACTIVITIES

Buckley AFB has in place a General Plan to guide current and future development (Buckley AFB 2009d). The General Plan establishes long-range goals and provides starting points to discuss land acquisition or disposal actions and siting of new facilities. The plan helps to define the most appropriate layout of land uses and transportation corridors to support functional effectiveness, efficiency, and compatibility. Both on- and off-base factors are considered. The General Plan is intended to guide infill development on currently vacant land, functional consolidation, and redesignation of land uses to accommodate doubling of the installation's current population (Buckley AFB 2009d).

There are a number of recent, current, and planned Capital Improvement Projects to support Buckley AFB's continuing transition from an Air National Guard Base to an AFB and to facilitate future growth. As the prioritization, initiation, and completion of construction projects are dynamic, Table 5-1 represents the current schedule at the time of this EA; scope, priority, and schedule of individual projects could potentially change. The information in Table 5-1 is provided as a reference to compare the Proposed Action in the context of other planned projects.

For the purposes of this EA, recently completed, currently under construction, and planned cumulative construction and demolition projects on-base through Fiscal Year 2015 have been evaluated. Proposed construction projects include a wide diversity of proposed buildings and structures, including barracks, administration buildings, utility and access point infrastructure, training facilities, and support buildings. When combined with proposed demolition activities, these cumulative projects would result in a net increase of approximately 944,100 square feet (sf) of facilities and a net increase of approximately 1.17 million square yards of paved surfaces at Buckley AFB (Buckley AFB 2009d).

1 **Table 5-1. Projects Planned at Buckley AFB**

Project Title	Land Use	Size		Status
		Building Area (sf)	Parking Area (sy)	
Construction Projects				
(1) Car Wash	Mercantile	5,000	1,235	Recently completed
(2) Chapel	Assembly	22,305	3,280	Recently completed
(3) Child Development Center	Educational	21,837	2,502	Recently completed
(4) Communications Center	Business	53,403	8,054	Recently completed
(5) Consolidated Services	Business	11,384	2,000	Recently completed
(6) Leadership Development Center	Assembly	18,674	1,000	Recently completed
(7) Outdoor Recreation	Mercantile	8,688	3,750	Recently completed
(8) Privatized Housing	Residential	N/A	N/A	Recently completed
(9) Vehicle Inspection Facility	Factory/Industrial	4,000	500	Recently completed
(10) Consolidated Fuels Storage	Factory/Industrial	10,000	5,000	Currently under construction
(11) VQ/TLF - Phase I (NAF)	Residential	109,002	25,000	Currently under construction
(12) Squadron Operations Facility (COANG)	Business	35,768	5,000	Currently under construction
(Basewide) Utility Infrastructure Support (BRAC)	N/A	N/A	N/A	Currently under construction
(13) Security Forces (BRAC)	Business	9,375	5,000	Currently under construction
(14) Official Mail Center	Mercantile	4,000	1,000	Fiscal Year 2009
(15) Alert Crew Quarters - West Ramp (COANG)	Business	6,500	500	Fiscal Year 2009
(16) Air Reserve Personnel Center (BRAC)	Business	105,336	25,000	Fiscal Year 2009
(17) Base Ops (Squad Ops - COANG)	Business	22,950	10,000	Fiscal Year 2009
(18) MWD Dog Kennel SFS	Factory/Industrial	4,305	500	Fiscal Year 2009
(19) Family Camp (NAF)	Residential	1,044	522,720	Fiscal Year 2009
(20) Freight Transfer Facility	Factory/Industrial	12,000	5,000	Fiscal Year 2009
(21) AFR Training Facility (BRAC)	Business	28,500	5,000	Fiscal Year 2009

2

Table 5-1. Projects Planned at Buckley AFB (Continued)

Project Title	Land Use	Size		Status
		Building Area (sf)	Parking Area (sy)	
(22) Pharmacy	Mercantile	5,712	1,000	Fiscal Year 2009
(23) Shopette (AAFES)	Mercantile	7,500	1,000	Fiscal Year 2009
(24) Youth Center	Educational	32,291	5,000	Fiscal Year 2009
(25) Weapons Release (COANG)	Factory/Industrial	17,500	1,000	Fiscal Year 2009
(26) Freight Transfer Facility	Factory/Industrial	12,000	5,000	Fiscal Year 2009
(27) Commissary Addition	Mercantile	5,000	500	Fiscal Year 2010
(28) Medical Clinic	Business	10,000	500	Fiscal Year 2010
(29) Military Entry Processing Station (MEPS)	Business	10,000	2,000	Fiscal Year 2010
(30) Repair South Runway (COANG)	N/A	N/A	59,856	Fiscal Year 2010
(31) Consolidated Support Facility (ADF)	Business	94,940	10,000	Fiscal Year 2011
(32) EOD Training Range (COANG)	Utility/ Miscellaneous	N/A	N/A	Fiscal Year 2011
(33) 460 Security Forces Operations Facility *	Business	35,768	10,000	Fiscal Year 2011
(34) Fire Trainer	Utility/ Miscellaneous	8,000	500	Fiscal Year 2012/13
(35) Replace AGE/ ASE (COANG)	Business	5,000	500	Fiscal Year 2012/13
(36) Taxiway Arm/Disarm Pads (COANG)	N/A	N/A	50,000	Fiscal Year 2012/13
(37) Upgrade Taxiways Juliet and Lima (COANG)	N/A	N/A	50,000	Fiscal Year 2012/13
(38) CATM Small Arms Indoor Range	Utility/ Miscellaneous	23,735	500	Fiscal Year 2012/13
(39) RV Storage Lot (NAF) ** (FY12)	N/A	N/A	5,000	Fiscal Year 2012/13
(43) Relocate East Parking Apron (COANG)	N/A	N/A	40,300	Fiscal Year 2014
(44) North Runway Extension (COANG)	N/A	N/A	59,856	Fiscal Year 2014
(45) Main Ramp Expansion I (COANG)	N/A	N/A	50,000	Fiscal Year 2014
(46) Main Ramp Expansion II (COANG)	N/A	N/A	50,000	Fiscal Year 2014

Table 5-1. Projects Planned at Buckley AFB (Continued)

Project Title	Land Use	Size		Status
		Building Area (sf)	Parking Area (sy)	
(47) Weapons Live Load/ Hot Cargo (COANG)	N/A	N/A	50,000	Fiscal Year 2014
(48) Logistics Readiness Facility *	Factory/Industrial	24,650	10,000	Fiscal Year 2014
(49) ADF Overflow Parking	N/A	N/A	20,000	Fiscal Year 2015+
(50) Alert Crew Quarters - East Ramp (COANG)	Business	5,000	500	Fiscal Year 2015+
(51) Arts, Crafts and Auto Skills	Factory/Industrial	11,119	1,000	Fiscal Year 2015+
(52) Athletic Fields (Place Holder)	Utility/ Miscellaneous	N/A	5,000	Fiscal Year 2015+
(53) Camp Rattlesnake	Utility/ Miscellaneous	N/A	N/A	Fiscal Year 2015+
(54) Cold Storage	Factory/Industrial	5,000	500	Fiscal Year 2015+
(55) Community Activity Center/ Bowling	Mercantile	35,600	2,000	Fiscal Year 2015+
(56) Covered Storage	Factory/Industrial	5,000	500	Fiscal Year 2015+
(57) Airman Dining Facility	Residential	10,000	500	Fiscal Year 2015+
(58) Dormitory Three	Residential	25,000	5,000	Fiscal Year 2015+
(59) Dormitory Four	Residential	25,000	5,000	Fiscal Year 2015+
(60) Entry Control Facility (6th Ave)	Business	9,528	1,000	Fiscal Year 2015+
(61) Entry Control Facility (Gun Club Rd)	Business	9,709	1,000	Fiscal Year 2015+
(62) Entry Control Facility (Mississippi)	Business	9,709	1,000	Fiscal Year 2015+
(63) Entry Control Facility (Telluride)	Business	6,107	1,000	Fiscal Year 2015+
(64) Fire/Crash Rescue (Joint with COANG)	Utility/ Miscellaneous	23,000	1,000	Fiscal Year 2015+
(65) Fitness Center Addition	Mercantile	34,207	1,000	Fiscal Year 2015+
(68) Logistics Readiness Complex/ Base Warehouse	Factory/Industrial	55,000	1,000	Fiscal Year 2015+
(69) Missile Shop	Factory/Industrial	5,000	500	Fiscal Year 2015+
(70) Missile Storage	Factory/Industrial	5,000	500	Fiscal Year 2015+
(71) PAX Terminal	Business	5,000	500	Fiscal Year 2015+
(72) Privatized Housing	Residential	N/A	N/A	Fiscal Year 2015+

Table 5-1. Projects Planned at Buckley AFB (Continued)

Project Title	Land Use	Size		Status
		Building Area (sf)	Parking Area (sy)	
(73) Shopette	Mercantile	7,500	500	Fiscal Year 2015+
(74) SBIRS Operations Support Facility	Business	10,000	2,000	Fiscal Year 2015+
(75) Joint Vehicle Maintenance Facility	Factory/Industrial	19,525	5,000	Fiscal Year 2015+
(76) VQ/TLF - Phase II (NAF)	Residential	37,950	10,000	Fiscal Year 2015+
(76) VQ/TLF - Phase II (NAF)	Residential	39,722	10,000	Fiscal Year 2015+
(77) Add/ Alter Fire Station	Utility/ Miscellaneous	21,531	1,000	Fiscal Year 2015+
(78) Education Center/Library	Business	22,000	2,000	Fiscal Year 2015+
Demolition Projects				
Consolidated Fuels Storage Area	Factory/Industrial	10,000	555	Fiscal Year 2010
CATM Range	Utility/ Miscellaneous	3,023	3,872	Fiscal Year 2010
Haz Storage (344), H-70 Hydrazine Storage (310), Entomology (306)	Factory/Industrial	2,140	N/A	N/A
Fuel storage tanks next to Buildings 200 and 341	Factory/Industrial	1,792	N/A	Fiscal Year 2010
Former Wastewater Treatment Facility	Factory/Industrial	243,778	N/A	Fiscal Year 2015+
Building 940	Factory/Industrial	14,758	N/A	Fiscal Year 2015+
Building 1606 (control tower) related to construction of fire station building	Utility/ Miscellaneous	8,783	N/A	Fiscal Year 2015+

1 N/A - Not available

2 sf - square feet

3 sy - square yard

4 Source: Buckley AFB 2009d.

5 Although the scope, priority, and schedule of individual projects could
6 potentially change, the potential exists for cumulative impacts to occur with
7 regard to air quality as future growth at Buckley AFB and the City of Aurora is

1 anticipated to result in increased traffic and construction emissions. Cumulative
2 air quality impacts are expected to result in moderate adverse impacts related to
3 both on- and off-base construction activities and increased use- and personnel-
4 related emissions. The Proposed Action would constitute a minor contribution
5 to these impacts given the small scale of the project and since the Proposed
6 Action and all individual projects would be required to implement best
7 management practices (BMPs) to reduce fugitive dust and combustion emissions
8 during construction activities to acceptable levels.

9 With regard to geological resources, on-base cumulative project development
10 would locally impact soils at Buckley AFB and would not contribute to
11 geological resource impacts related to development in off-base areas. Soils at
12 Buckley AFB have been modified by past developments and are capable of
13 supporting development. In addition, individual projects would implement
14 BMPs to limit any impacts to soils which may result from construction activities
15 including watering and/or soil stockpiling, thereby reducing the amount of
16 exposed soil to negligible levels. Consequently, cumulative impacts to geological
17 resources are expected to be minor and the Proposed Action's contribution to
18 cumulative impacts would be negligible.

19 With regard to hazardous materials and waste, cumulative impacts are expected
20 to be moderate and adverse as future development would include the use of
21 hazardous materials and wastes. These impacts would be localized to Buckley
22 AFB only. The Proposed Action's contribution to these impacts would be
23 negligible since it, as well as all individual projects, would be required to use and
24 dispose of hazardous materials and wastes in accordance with all applicable
25 regulations.

26 Cumulative impacts to safety would include minor to moderate long-term
27 beneficial effects as new development would comply with Antiterrorism/Force
28 Protection standards and enhance base-wide safety conditions. These impacts
29 would be localized to Buckley AFB only and anticipated off-base projects would
30 not impact safety conditions on-base. Furthermore, cumulative impacts with
31 regard to occupational health would be minor and adverse due to short-term
32 risks associated with construction activity; however, all individual projects
33 would be required to adhere with appropriate regulations and BMPs to

- 1 minimize these risks and the Proposed Action's contribution to this cumulative
- 2 impact would be negligible.

SECTION 6

SUMMARY OF FINDINGS

As a supplement to the *Environmental Assessment for Buckley Air Force Base Military Construction, Buckley Air Force Base, Colorado* (2001), this Environmental Assessment (EA) considers proposed Additions and Alterations (ADAL) to the Fitness Center Complex at Buckley Air Force Base (AFB) and evaluates potential environmental impacts of project enhancement to those resources. Summaries of environmental impacts anticipated to result from implementation of the Proposed Action at Buckley AFB are provided in this section for the following resources:

Air Quality. Under implementation of the Proposed Action, fugitive dust would be generated from construction activities, including grading. Implementation of standard best management practices (BMPs) for dust control (e.g., regularly watering exposed soils, soil stockpiling, and soil stabilization) would reduce potential impacts to negligible levels. Combustion emissions resulting from construction and operational activities would be below *de minimis* thresholds for a General Conformity determination, and would not exceed 10 percent of the regional emissions inventory. Therefore, implementation of the Proposed Action does not require a conformity analysis and would result in minor air quality impacts.

Geological Resources. Potential impacts to geological resources associated with the Proposed Action at the Fitness Center Complex would be limited to ground-disturbing activities (i.e., construction). Short-term, minor impacts would result from construction and demolition projects; however, these activities would occur on previously disturbed land which is capable of supporting such development. No areas of shallow or exposed bedrock are present at areas any of the proposed project sites. Additionally, the project site is relatively level and does not present any topographical restraints. Implementation of fugitive dust control measures during construction, as described in Section 4.2 *Geological Resources*, would limit adverse impacts to soils which may result from construction and demolition activities. Therefore, impacts to geological resources would be negligible.

1 **Hazardous Materials and Wastes.** The Proposed Action would result in a short-
2 term increase in the storage of construction-related hazardous materials and
3 wastes; however, the increase would be temporary and would constitute a
4 negligible impact. The Proposed Action site is not located within or adjacent to
5 Environmental Restoration Program or Military Munitions Response Program
6 sites; however, asbestos-containing material (ACM) is present within the soil of
7 at the Proposed Action site and could potentially be encountered during
8 construction activities. All ACM encountered during construction would be
9 handled in accordance with Buckley AFB's Asbestos Operating Plan and a
10 project-specific Asbestos Management Plan which would include construction
11 crew training on handling and disposal of ACM. In addition, radon-resistant
12 construction techniques would be implemented to prevent radon entry to the
13 proposed facilities and chemicals required for cleaning and maintaining the
14 proposed lap pool would comply with appropriate regulations for storage and
15 use. Therefore, impacts to hazardous material and wastes would be negligible.

16 **Safety and Occupational Health.** Construction of the proposed ADAL to the
17 existing Fitness Center Complex would incorporate appropriate
18 Antiterrorism/Force Protection (AT/FP) standards including required setbacks
19 from roadways and parking lots and adequate surrounding object-free standoff
20 areas. As a result, no impacts with regard to AT/FP standards would occur
21 under the Proposed Action. Construction and demolition activities associated
22 with the Proposed Action would conform with all Occupational Safety and
23 Health Administration regulations including industrial hygiene programs to
24 address exposure to hazardous materials, use of personal protective equipment,
25 and incorporation and use of appropriate Material Safety Data Sheets. In
26 addition, contractor worker training programs would be required and
27 implemented during construction activities. Therefore, with regard to
28 occupational health, implementation of the Proposed Action would result in
29 negligible impacts.

SECTION 7

SPECIAL PROCEDURES

Impact evaluations conducted during preparation of this Environmental Assessment (EA) have determined that no major environmental impacts would result from implementation of the Proposed Action at Buckley Air Force Base (AFB). This determination is based on a thorough review and analysis of existing resource information, the application of accepted modeling methodologies, and coordination with knowledgeable, responsible personnel from the U.S. Air Force and relevant local, state, and Federal agencies. Further—in addition to standard best management practices such as implementation of control measures for reducing fugitive dust emissions; safe identification and removal of any asbestos and other potentially hazardous materials; silt fencing and suspension of construction during rainy periods; soil stockpiling and replacement during excavation activities; and conforming to all Federal, state, and local requirements relating to storm water pollution prevention during construction activities, including development of a Notice of Intent and Storm Water Pollution Prevention Plan under the General Permit for Stormwater Discharges from Construction Activities Program—no special procedures are required prior to implementation of the Proposed Action.

SECTION 8

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SECTION 9

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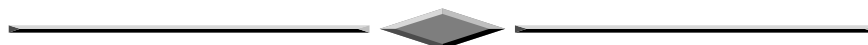
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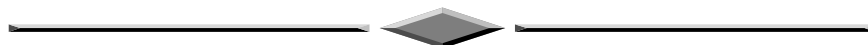
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APPENDIX A

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Ms. Nancy Chick
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APCD-TS-B2
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Denver, CO 80246-1530

Dear Ms. Chick,

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The public comment period for this EA is 15 days. Please provide any written comments by 5pm on Tuesday, 17 November 2009 to:

Ms. Pamela McWharter
460 CES/CEVP
660 South Aspen Street, Mail Stop 86
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If you have any questions please feel free to contact Pamela McWharter at 720-847-7159, or via e-mail: pamela.mcwharter.ctr@buckley.af.mil.


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Environmental Management Section
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Colorado Dept. of Public Health & Environment
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Ms. Eliza Moore
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Colorado Division of Wildlife
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Denver, CO 80216

Dear Ms. Moore,

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Mr. David Rathke
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Denver, CO 80202

Dear Mr. Rathke,

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Mr. Bruce Rosenlund
Colorado Field Supervisor
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134 Union Blvd., Suite 675
Lakewood, CO 80228-1807

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OCT 30 2009

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NEPA Unit Chief
U.S. Environmental Protection Agency
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Denver, CO 80202

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Director of Planning
City of Aurora
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Aurora, CO 80012

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OCT 30 2009

Ms. Carol Foreman
Central Library Reference Supervisor
Aurora Public Library Administrative Offices
14949 E. Alameda Pkwy.
Aurora, CO 80012

Dear Ms. Foreman,

The Air Force is pleased to provide the Aurora Public Library a review copy of the Draft Environmental Assessment (EA) for additions to and alterations within the existing Fitness Center Complex at Buckley Air Force Base (AFB), Colorado. We appreciate the Aurora Public Library's contribution in making this document available to the public for review and comment.

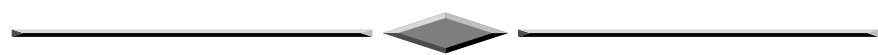
Public reviewers are asked to submit written comments (referencing Section, page, and line numbers to which comments apply) to the following address:

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Building 1005, Room 178
Buckley AFB, CO 80011-9551

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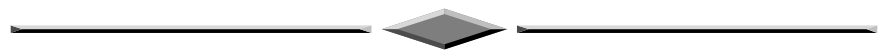
If you have any questions please feel free to contact Pamela McWharter at the address above.


BRUCE JAMES, YF-02
Chief, Environmental Flight



APPENDIX B

AIR EMISSION FACTORS AND ASSUMPTIONS



APPENDIX B

AIR EMISSION FACTORS AND ASSUMPTIONS

B.1 COMBUSTION EMISSIONS ASSOCIATED WITH CONSTRUCTION ACTIVITIES

Table B-1. Construction-Related Combustion Emission Factors

Equipment	Days	Hours of Operation	Emission Factors (lbs/hr)					ROG
			CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	
grader	260	2,600	0.567	1.623	0.084	0.077	0.276	0.148
loader	260	2,600	0.424	0.858	0.086	0.079	0.115	0.132
bobcat	260	2,600	0.268	0.508	0.054	0.050	0.0	0.09
dozer	260	2,600	1.209	3.037	0.123	0.113	0.453	0.232
paving equipment	260	2,600	0.419	0.961	0.069	0.063	0.144	0.117
paver	260	2,600	0.449	0.894	0.067	0.062	0.165	0.12

ROG = reactive organic gasses

Source: Santa Barbara County Air Pollution Control District (APCD) Form 24 -Table 2, 1997 (for all emission factors except for PM_{2.5}) South Coast Air Quality Management District, California Environmental Quality Act (CEQA) Air Quality Handbook, 1993 (for PM_{2.5} emissions fraction of PM₁₀ for off-road diesel equipment)

Assumptions: 52 weeks/year, 5 work days per week, 10 hours per work day; 2,600 hours of operation total and no excavation required for construction.

B.2 OPERATIONAL EMISSIONS

Table B-2. Operational Combustion Emissions Associated with Swimming Pool Heating

Equipment	Est. Natural Gas Usage (cu ft/yr)	Emission Factors (lbs/10 ⁶ cu ft natural gas)					
		CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	ROG
Pool heaters (>0.3 MMBTU)	1,276,713	84	100	7.6	7.6	0.6	5.5
Total Emissions (tons/yr)							
		CO	NO _x	PM ₁₀	PM _{2.5}	SO _x	ROG
Pool heaters (>0.3 MMBTU)	1,276,713	0.0536	0.0638	0.0049	0.0049	0.0004	0.0035

MMBTU = One million British thermal units

Notes: Natural gas annual throughput estimated based on pool heater usage at Los Angeles AFB's Fort MacArthur; California Air Resources Board (CARB) Emission Inventory Particulate Matter Speciation data indicates that 100% of the PM emissions from natural gas combustion are <PM-2.5

Source: Emission factors from AP-42, Section 1.4, Tables 1.4-1, 1.4-2, Residential Furnaces

Emissions from pool heating were calculated as follows: pollutant (ton/yr) = (est. natural gas usage [cu ft]/yr) x (emission factor lb/10⁶ natural gas [cu ft]) x (1 ton/ 2,000 lb)

CO (ton/yr) = 1,276,713 cu ft/yr x 84 lb/10⁶ cu ft x 1 ton/2,000 lb

